ligating under chemoselective chemical ligation conditions (i) at least one peptide segment comprising a functional protein module derived from said first protein, and (ii) at least one peptide segment comprising a functional protein module derived from said second protein, wherein the C-terminal residue of said peptide segment derived from said first protein and the N-terminal residue of said peptide segment derived from said second protein comprise compatible reactive groups capable of chemoselective chemical ligation to one another, whereby a covalent bond is formed between said compatible reactive groups of said peptide segments so as to produce a chemical ligation product comprising a cross-over protein in which the C-terminal residue of the peptide segment derived from said first protein is ligated to the N-terminal residue of said peptide segment derived from said second protein. --

-- 29. **[Amended]** The method of claim 28 further comprising the step of conducting one or more additional ligations with one or more additional peptide segments, each possessing an N-terminal amino acid residue and a C-terminal amino acid residue, wherein said additional peptide segments are selected from the group consisting of a peptide whose C-terminal residue comprises a reactive group capable of chemoselective chemical ligation with a reactive group of an N-terminal residue of another peptide, and a peptide whose N-terminal residue comprises a reactive group capable of chemoselective chemical ligation with a reactive group of an C-terminal residue of another peptide. --

-- 30. **[Three Times Amended]** The method of claim 28, wherein the first and second protein molecules from whose sequences said peptides are derived belong to the same family of protein molecules. --

-- 32. **[Three Times Amended]** A method of producing a cross-over protein library whose members contain two or more peptide segments, each segment possessing

an N-terminal amino acid residue and a C-terminal amino acid residue, and wherein the peptide segments of said members are derived from two or more different proteins, said method comprising:

incubating under chemoselective ligation reaction conditions a plurality of unique peptide segments each comprising one or more functional protein modules derived from a member of a first set of protein molecules and a plurality of unique peptide segments each comprising one or more functional protein modules derived from a member of a second set of protein molecules wherein the C-terminal residues of each of said peptide segments derived from said members of said first set of protein molecules and the N-terminal residue of each of said peptide segments derived from said members of said second set of protein molecules comprise compatible reactive groups capable of chemoselective chemical ligation to one another, whereby a covalent bond is formed between said compatible reactive groups of said peptide segments so as to produce a plurality of chemical ligation products comprising a plurality of unique cross-over proteins, wherein, for each such cross-over protein, the C-terminal residue of a peptide segment derived from a member of said first set of protein molecules is ligated to the N-terminal residue of a peptide segment derived from a member of said second set of protein molecules. --

F4 cont.

-- 33. **[Twice Amended]** The method of claim 32, wherein said plurality of peptide segments derived from members of said first set of protein molecules are obtained by cross-over ligation of two or more different families of protein molecules. --

-- 34. **[Twice Amended]** The method of claim 32, wherein said plurality of peptide segments derived from members of said second set of protein molecules are obtained by cross-over ligation of two or more different families of protein molecules. --

F4 Sub 62 cont.

-- 33. [**Three Times Amended**] The method of claim 32, wherein said first and second protein molecules belong to the same family of protein molecules. --

In The Specification:

Please rewrite the paragraph beginning at page 19, line 25 and continuing to page 20, line 9 as follows:

-- Assays of particular interest employ receptors provided by tissues or cell preparations, synthetic preparations and the like. Receptors of particular interest are lipid membrane-bound receptors generated by lipid matrix-assisted chemoselective chemical ligation as described in U.S. Patent Application Serial No. 09/144,964. Screening for binding of a cross-over protein ligand comprising one or more chromophores to a target receptor is preferably performed in a FRET assay. Ligand binding can be measured by any number of methods known in the art for FRET analyses, including steady state and time-resolved fluorescence by monitoring the change in fluorescence intensity, emission energy and/or anisotropy, for example, through energy transfer from a donor moiety to an acceptor moiety of the FRET system. (See, e.g., Wu et al., Analytical Biochem. (1994) 218: 1-13). FRET assays allow not only distance measurements, but also resolution of the range of donor- to-acceptor distances. FRET also can be used to show that the ligand and/or target receptor exists alternately in a single conformational state, or with a range of donor-to-acceptor distances when in a different state, such as when bound to a ligand. More than one donor-acceptor pairing may also be included. --

F5

Remarks

I. Status

Claims 28-36 are pending. Applicants appreciate the Examiner's care in evaluating the patentability of the claimed invention. Applicants have amended the claims to more clearly describe their invention. The claims have thus been amended to